CLAIMS

1. A method for the production of an InP single crystal, comprising:

gradually cooling a molten raw material held in contact with a seed crystal to solidify the molten raw material from a lower part toward an upper part of an interior of a crucible and grow a single crystal;

causing the seed crystal to possess an average dislocation density of less than $10000/cm^2$ and assume substantially identical cross-sectional shape and size with a cross-sectional shape and size of a single crystal to be grown; and

allowing the InP single crystal to be grown to retain a non-doped state or a state doped with Fe or Sn.

2. A method according to claim 1, wherein the seed crystal is a seed crystal possessing a largest dislocation density of less than $30000/cm^2$.

3. A method according to claim 1 or claim 2, wherein the seed crystal is a seed crystal manufactured from an InP single crystal produced by the method according to claim 1 or claim 2.

4. A method for the production of an InP single crystal, comprising:

gradually cooling a molten raw material held in contact with a seed crystal to solidify the molten raw material from a lower part toward an upper part of an interior of a crucible and consequently grow a single crystal;

causing the seed crystal to possess an average dislocation density of less than $500/cm^2$ and assume substantially identical cross-sectional shape and size with a cross-sectional shape and size of a single crystal to be grown; and

allowing the InP single crystal to be grown to retain a state doped with S or Zn.

5. A method according to claim 4, wherein the seed crystal is a seed crystal possessing a largest dislocation density of less than $3000/cm^2$.

6. A method according to claim 4 or claim 5, wherein the seed crystal is a seed crystal manufactured from an InP single crystal produced by the method according to claim 4 or claim 5.

7. A method for the production of a GaAs single crystal, comprising:

gradually cooling a molten raw material held in contact with a seed crystal to solidify the molten raw material from a lower part toward an upper part of an interior of a crucible and consequently grow a single crystal;

causing the seed crystal to possess an average dislocation density of less than $500/cm^2$ and assume substantially identical cross-sectional shape and size with a cross-sectional shape and size of a single crystal to be grown; and

allowing the GaAs single crystal to be grown to retain a state doped with Si or Zn.

8. A method according to claim 7, wherein the seed crystal is a seed crystal possessing a largest dislocation density of less than $3000/cm^2$.

9. A method according to claim 7 or claim 8, wherein the seed crystal is a seed crystal manufactured from a GaAs single crystal produced by the method according to claim 7 or claim 8.

10. A non-doped, Fe-doped or Sn-doped InP single crystal possessing a dislocation density of less than $5000/cm^2$, which is manufactured by the method according to claims 1 or claim 2.

11. A non-doped, Fe-doped or Sn-doped InP single crystal possessing a dislocation density of less than $5000/cm^2$, which is manufactured by the method according to claim 3.

12. An S-doped or Zn-doped InP single crystal possessing a dislocation density of less than $500/cm^2$, which is manufactured by the method according to claim 4 or claim 5.

13. An S-doped or Zn-doped InP single crystal possessing a dislocation density of less than 500/cm^2, which is manufactured by the method according to claim 6.

14. An Si-doped or Zn-doped GaAs single crystal possessing a dislocation density of less than 500/cm^2, which is manufactured by the method according to claim 7 or claim 8.

15. An Si-doped or Zn-doped GaAs single crystal possessing a dislocation density of less than 500/cm^2, which is manufactured by the method according to claim 9.